



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/775,069	02/01/2001	Gerard A. Mourou	UMJ-939-R	1906

7590 07/17/2002

LINDA M. DESCHERE
HARNES, DICKEY & PIERCE, P.L.C.
5445 CORPORATE DRIVE, SUITE 400
TROY, MI 48098-2683

EXAMINER

EVANS, GEOFFREY S

ART UNIT PAPER NUMBER

1725

14

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/775,069

Applicant(s)

MOUROU ET AL.

Examiner

Geoffrey S Evans

Art Unit

1725

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2002 and 07 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 46-61 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 46-61 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. The first sentence of the specification should be amended to refer to all of the other reissue applications in accordance with 37 CFR 1.777(a). Please note that no mention is currently made of copending application No. 09/775,106.
2. The original patent, or a statement as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. See 37 CFR 1.178. Although applicant has surrendered this patent in the previous reissue application, applicant needs to include a statement in this file that U.S. Patent No. 5,656,186 was previously surrendered in application No. 09/366,685.
3. In accordance with 37 CFR 1.175(b)(1), a supplemental reissue oath/declaration under 37 CFR 1.175(b)(1) must be received before this reissue application can be allowed.

Claims 46-61 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251. See 37 CFR 1.175. The nature of the defect is set forth above.

Receipt of an appropriate supplemental oath/declaration under 37 CFR 1.175(b)(1) will overcome this rejection under 35 U.S.C. 251. An example of acceptable language to be used in the supplemental oath/declaration is as follows:

"Every error in the patent which was corrected in the present reissue application, and is not covered by a prior oath/declaration submitted in this application, arose without any deceptive intention on the part of the applicant."

4. Claim 50 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably

Art Unit: 1725

convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no disclosure in the original specification of a material that is both transparent (as disclosed in claim 50) and organic (as recited in independent claim 46).

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 46, 55, 58, 59 and 61 are rejected under 35 U.S.C. 102(e) as being anticipated by Kautek et al. in the article "Femtosecond pulse laser ablation of metallic, semiconducting, ceramic and biological materials" (Kautek et al. has a publication date of April 5, 1994; 3 days before Applicant's filing date.) Kautek et al. discloses using pulses of 300 femtoseconds for laser ablation of biological materials (which are of course organic) on pages 606 and 607 of the article. In contrast, Applicant discloses

Art Unit: 1725

(see column 8, example 3, lines 10-32 of U.S. Patent No. 5,656,186) that the point at which the log-log relationship changes is about 10 picoseconds. Since Kautek et al. discloses a pulse width shorter than 10 picoseconds inherently under Applicant's discovered law of nature (the log-log relationship between the fluence threshold at which breakdown occurs versus laser pulse width, the relationship exhibiting a distinct change in slope with respect to decreasing pulse width to a nearly constant value) the laser pulse ablation of Lai must also be subject to the same law of nature. See EMI Group North America Inc. v. Cypress Semiconductor Corp., 60 USPQ 1423, 1430 (CAFC 2001) which states "Recitation of a law of nature does not distinguish a claim from the prior art. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948) ("[M]anifestations of laws of nature [are] free to all men and reserved exclusively to none. He who discovers a hitherto unknown phenomenon of nature has no claim to monopoly of it which the law recognizes.")". Similarly Applicant's discovery of the breakdown including changes caused by one or more of ionization, free electron multiplication, dielectric breakdown, plasma formation and vaporization is a law of nature.

7. Claims 46, 55, 56, 58, 59 and 61 are rejected under 35 U.S.C. 102(e) as being anticipated by Lai in U.S. Patent No. 5,984,916. Lai discloses laser ablating an organic (i.e. biological tissue, a cornea) with a laser pulse having a pulse width as small as .01 picoseconds (i.e. 10 femtoseconds) to 2 picoseconds (i.e. 2000 femtoseconds). In contrast, Applicant discloses (see column 8, example 3 lines 10-32) that the point at

Art Unit: 1725

which the log-log relationship changes is about 10 picoseconds. Since Lai discloses a pulse width shorter than 10 picoseconds inherently under Applicant's discovered law of nature (the log-log relationship between the fluence threshold at which breakdown occurs versus laser pulse width, the relationship exhibiting a distinct change in slope with respect to decreasing pulse width to a nearly constant value) the laser pulse ablation of Lai must also be subject to the same law of nature. See EMI Group North America Inc. v. Cypress Semiconductor Corp., 60 USPQ 1423, 1430 (CAFC 2001) which states "Recitation of a law of nature does not distinguish a claim from the prior art. Funk Bros. Seed Co. v. Kalo Inculant Co., 333 U.S. 127,130 (1948) ("[M]anifestations of laws of nature [are] free to all men and reserved exclusively to none. He who discovers a hitherto unknown phenomenon of nature has no claim to monopoly of it which the law recognizes.")". Regarding claim 55, Lai in U.S. Patent No. 5,984,916 discloses in column 13, lines 35-38 discloses ablating a layer of tissue beneath the surface of the eye. Since Lai discloses a pulse width shorter than 10 picoseconds inherently under Applicant's discovered law of nature (the characteristic pulse width being defined by the log ablation threshold of the material as a function of log pulse width position where the ablation threshold function is no longer proportional to the square root of pulse width) the laser pulse ablation of Lai must also be subject to the same law of nature. See EMI Group North America Inc. v. Cypress Semiconductor Corp., 60 USPQ 1423, 1430 (CAFC 2001) which states "Recitation of a law of nature does not distinguish a claim from the prior art. Funk Bros. Seed Co. v. Kalo Inculant Co., 333 U.S. 127,130 (1948) ("[M]anifestations of laws of nature [are] free to all men

Art Unit: 1725

and reserved exclusively to none. He who discovers a hitherto unknown phenomenon of nature has no claim to monopoly of it which the law recognizes.”)

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 47, 51, 54 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai in U.S. Patent No. 5,984,916 in view of Lin in U.S. Patent No. 5,520,679. Lai (916) discloses laser ablating biological material using a laser pulse energy of 3.14 microjoules, which is outside the range of the recited range of pulse energies. Lin teaches that in laser ablation of a biological material (i.e. eye) that lower pulse energies are sufficient for laser ablation (e.g. see column 7, lines 48-54 and

Art Unit: 1725

preceding lines for the theory) when laser pulse widths are small. Lin further teaches in column 9, lines 14-15 using laser pulse energies of .01 to 100 microjoules, which includes the range of .01 microjoules to 1 microjoule. It would have been obvious to adapt Lai in U.S. Patent No. 5,984,916 in view of Lin to provide laser pulse energies of 0.01 microjoules to 1 microjoule to laser ablate the biological tissue; the motivation being to more finely ablate the cornea (biological material).

11. Claims 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lai in U.S. Patent No. 5,984,916 in view of Nishiwaki et al. in Japan Patent No. 62-93,095. Lai discloses in column 16, lines 35-37 using a beam spot diameter of about 10 microns and notes the desirability of using differing beam spot diameters for different operations (see column 12, lines 57-59). Nishiwaki et al. teaches changing lenses having different focus lengths (and therefore different f numbers) to adjust the beam spot size. It would have been obvious to adapt Lai in view of Nishiwaki et al. to provide this to adjust the beam spot size.

12. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lai in U.S. Patent No. 5,984,916 in view of Nishikawa et al. in Japan Patent No. 62-144,893. Lai discloses laser ablating an organic (i.e. biological tissue, a cornea) with a laser pulse having a pulse width as small as .01 picoseconds (i.e. 10 femtoseconds) to 2 picoseconds (i.e. 2000 femtoseconds). In contrast, Applicant discloses (see column 8, example 3 lines 10-32) that the point at which the log-log relationship changes is about 10 picoseconds. Since Lai discloses a pulse width shorter than 10 picoseconds inherently under Applicant's discovered law of nature (the log-log relationship between

Art Unit: 1725

the fluence threshold at which breakdown occurs versus laser pulse width, the relationship exhibiting a distinct change in slope with respect to decreasing pulse width to a nearly constant value) the laser pulse ablation of Lai must also be subject to the same law of nature. See EMI Group North America Inc. v. Cypress Semiconductor Corp., 60 USPQ 1423, 1430 (CAFC 2001) which states "Recitation of a law of nature does not distinguish a claim from the prior art. Funk Bros. Seed Co. v. Kalo Inculant Co., 333 U.S. 127, 130 (1948) ("[M]anifestations of laws of nature [are] free to all men and reserved exclusively to none. He who discovers a hitherto unknown phenomenon of nature has no claim to monopoly of it which the law recognizes.")". Lai does not disclose directing the beam with a lateral gaussian profile characterized in that fluence at or near the center of the beam spot is greater than the threshold fluence whereby the laser induced breakdown is ablation of an area within the spot. Nishikawa et al. teaches using a laser beam with a lateral gaussian profile to cut in the beam spot where the beam intensity is larger than a threshold value for cutting the material. It would have been obvious to adapt Lai in view of Nishikawa et al. to provide this to finely cut thin material.

13.

Claims 46-51 and 55-59 are rejected under 35 U.S.C. 251 as being an improper recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. See *Hester Industries, Inc. v. Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement*, 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997); *Ball Corp. v. United States*, 729 F.2d 1429, 1436,

Art Unit: 1725

221 USPQ 289, 295 (Fed. Cir. 1984). A broadening aspect is present in the reissue, which was not present in the application for patent. The record of the application for the patent shows that the broadening aspect (in the reissue) relates to subject matter that applicant previously surrendered during the prosecution of the application. Accordingly, the narrow scope of the claims in the patent was not an error within the meaning of 35 U.S.C. 251, and the broader scope surrendered in the application for the filing of the present reissue application cannot recapture the patent.

During the prosecution of U.S. Patent No. 5,656,186, (U.S. Application Serial No. 08/224,961) in reply to the rejection of August 10, 1995 in the amendment of December 4, 1995 (which amended the claims by changing "predetermined" to "characterized") Applicant argued on page 10, lines 21-23 that "Miyauchi does not employ pulse widths that are less than the 'characteristic pulse width' as defined in claim 1 as now amended." Since the preamble of claim 1 in 08/224,961 recites that "the material being characterized by a relationship of fluence breakdown threshold versus laser pulse width having a rapid and distinct change in slope" to not have this limitation in independent claims 46 and 55 would be an improper recapture of subject matter previously surrendered during the prosecution of U.S. Application No. 08/224,961. Respectfully suggest in claims 46 and 55 on line 4 changing "distinct change in slope" to " a rapid and distinct change in slope " to overcome this rejection.

14. Claim 53 patentably defines over the prior art of record


15. Claim 57 patentably defines over the art of record but is rejected under 35 U.S.C. 251 as stated above.

Art Unit: 1725

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S Evans whose telephone number is (703)-308-1653. The examiner can normally be reached on Mon-Fri 6:30AM to 4:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703)-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-305-7718 for regular communications and (703)-305-5585 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0661.


Geoffrey S Evans
Primary Examiner
Art Unit 1725

GSE
July 9, 2002